Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

late paper this writer communicates the results of the examination of crystals of hematite produced by sublimation in smelting furnaces and those from San Sebastiano, Italy, that are supposed to have been formed in an analogous manner. In all of these the habit is the same, although different combinations of nearly related forms occur on them. Sublimed valentinite and senarmontite are likewise studied. Cuprite produced by slow oxidation at a low temperature has an octahedral or dodecahedral habit, while that produced at a high temperature is probably hexahedral. Struvite obtained from a solution of Koch's peptone differs materially from the natural mineral, but the differences have not yet been carefully enough studied to warrant any general conclusion being drawn from the observations. Further articles from Prof. Arzruni will be looked for with interest.

BOTANY.

The Relative Altitudes of the Rocky and Appalachian Mountain Systems as Influencing the Distribution of Northern Plants.—In the study of the geographical distribution of North American plants certain difficulties have been apparent since the adoption of three "regions," extending north and south, and denominated respectively the eastern, central, and western. A much better division of the continent is that proposed by Britton,[1] who recognizes a northern region, including British America, the Sierras, the Rockies, and the Alleghenies; and a southern region, including the Atlantic coast, Mississippi valley, and a part of California. Not only does such an arrangement of regions make it possible to group more correctly the known facts of spermaphytic distribution, but, to a certain extent, it corresponds more exactly with the probable method of original distribution of all plants over the continental area of North America. Since the glacial period the great drift-covered tracts have been covered with vegetation, spreading slowly from Siberia and Scandinavia on the north, and from Mexico and South America on the south. The flora of North America, then, exclusive of Mexico, is, for the most part, a resultant of the greater or less commingling of these two currents of vegetation, the one flowing constantly to the south, the other as constantly flowing northward.

---

[1] The General Distribution of North American Plants; by N. S. Britton. Meeting of the American Association for the Advancement of Science. 1890.

That a group of plants developed most abundantly in high northern latitudes should extend southward along north and south mountain ranges is precisely what one would expect, for in such localities conditions resembling the normal would be obtained. Consequently a large number of distinctively boreal plants may be found on the tops of high tropical mountains. With this well-known fact of distribution in mind, it will be plain that one should expect a high mountain range to bring south a greater number of northern plants than could be brought by a low mountain range. Such a hypothesis would find some support, at least, if one considers the distribution of Canadian spermaphytic genera in the southwestern United States, and then in the southeastern. Of the two great mountain systems of North America, the western is much higher and extends farther to the south. Throughout Colorado the elevation of Rocky Mountain peaks is somewhat over 13,000 feet, while the highest peak of the Alleghenies is barely 8,000 feet, above sea-level. The Rocky Mountain range from Montana to New Mexico averages about twice the height of the Appalachian chain from New York to the Carolinas.

The accompanying table is compiled to exhibit what seems to be the clearly preponderant massing of typically northern plants southwest rather than southeast. In the compilation only the more compendious lists have been employed. These are those of Macoun, Watson, Coulter, Chapman, Gray, and Porter. The table shows the number of species and varieties of several distinctively northern and south-bound genera in Canada, in the southern Colorado and New Mexico regions, and in the southern Appalachian regions, respectively. For the most part, genera which have their greatest North American development in British America are the ones which have been selected. In the majority of cases, too, the genera chosen are those of wide range, east and west, in the Canadian region. It is possible that the figures are not exactly accurate for many of the entries, since only a little critical work on the nomenclature has been attempted, and some synonyms may have crept into the totals. Again, especially in the southwestern region, some entries should doubtless be made from the smaller plant lists, not given by the larger lists, which alone were employed. This source of error, as will be seen, would not at all tend to vitiate the general results.

A TABLE SHOWING THE RELATIVE DISTRIBUTION SOUTHWESTWARD AND SOUTHEASTWARD OF CERTAIN DISTINCTIVELY BOREAL GENERA OF NORTH AMERICAN SPERMAPHYTES:

	Canada.	Southern Rocky Mts.	Southern Alleghenies.		Canada.	Southern Rocky Mts.	Southern Alleghenies.
Anemone,	14	5–6	3	Potentilla,	45	28	3
Ranunculus,	41	24	14	Rosa,	19	6	4
Caltha,	5	1	1	Saxifraga,	38	17	5
Aquilegia,	5	7	1	Mitella,	5	2	1
Delphinium,	5	5	3	Huchera,	7	6	5
Nymphæa L.,	4	2	2	Parnassia,	5	3	2
Cardamine,	10	5	3	Epilobium,	17	8	3
Draba,	26	14	5	Peucedanum,	9	4	0
Arabis,	15	8	6	Lonicera,	12	3	3
Lepidium,	7	4	1	Galium,	17	8	7
Sisymbrium,	12	4	3	Valeriana,	6	3	2
Nasturtium,	8	5	3	Campanula,	10	4	4
Viola,	31	11	16	Vaccinium,	22	5	10
Silene,	11	6	6	Bryanthus,	5	1	0
Lychnis,	11	3	0	Kalmia,	4	1	4
Arenaria,	20	17	2	Ledum,	4	0	0
Stellaria,	18	8	4	Pyrola,	14	7	1
Cerastium,	12	4	4	Primula,	9	3	0
Sagina,	5	3	1	Gentiana,	29	15	7
Claytonia,	13	5	2	Veronica,	15	5	4
Geranium,	9	7	2	Castilleja,	6	9	1
Oxalis,	4	3	3	Plantago,	17	6	4-5
Lupinus,	16	11	3	Betula,	9	2	3
Trifolium,	20	10	6	Alnus,	5	3	2
Vicia,	8–9	5	4	Salix,	62	18–19	6–8
Spiræa,	8	3	2	Populus,	7	4	3
Dalibarda L.	22	6	6	Habenaria,	22	4	2
Geum,	11	6	3	Cypripedium,	8	2	4
Fragaria,	4	3	1	Unifolium,	7	3	2

In glancing over this table it will be seen that such larger and more widely distributed genera as Ranunculus, Draba, Stellaria, Lupinus, Potentilla, Saxifraga, Epilobium, Pyrola, Plantago, and Salix are very clearly extended southwestward much more abundantly than southeastward. The same is true, less noticeably, of the smaller genera. Marked exceptions, however, will be noted in the genera Viola, Vaccinium, and Kalmia. These are all northern genera, and their anomalous distribution demands explanation. Of Viola it might be said with reason that many of the species have entered from the east rather than from the west. It is a cosmopolitan genus at the present day, and may have entered the continent by other paths. than the ordinary passage across Bering Strait. In Europe, according to Nyman,[1] there are fifty-six species of Viola, while in the Russian Empire, according to Ledebour[2] there are but forty. This would indicate an eastern expansion in North America, corresponding with the westward expansion in the old world. At any rate, the present diffused condition of Viola species makes the problem of the general distribution much more complicated than it might at first appear. The genus Viola, then, although probably northern in point of origin, has been redistributed from southern stations, it may be, and the position of species over continental areas is due to a more complicated interaction of causes than the present writer is able to explain. With reference to Vaccinium and Kalmia, however, no such argument can be employed. Of Vaccinium there are but ten species in the Russian Empire and but three in Europe. The genus is seen, therefore, to center in North America. Kalmia is a North American genus, one species ranging to Cuba, but none found native in the Eastern Hemisphere. Both of these genera, then, are somewhat differently situated from Pyrola, which, although centering in British America, has five species in Europe and five in the Russian Empire. Kalmia and Vaccinium, being typically North American, may have originated far eastward on the continent, and this would give an explanation of the greater distribution southeastward than southwestward. It is a fact that even the Canadian species of these two genera are principally in the eastern provinces. Only one species and one variety of Kalmia range west of Hudson Bay, and fifteen of the twenty-two species and varieties of Vaccinium range in the eastern provinces. A similar state of affairs on the west may be noted in the genera Arenaria and Peucedanum. Both of these are massed upon the western plateau-regions of the continent.

By adding up the column which shows the southeastern extension it will be found that the total is just about half of that obtained by adding up the column which shows the southwestward extension; that is, twice as many species of northern genera come south along the Rocky

---

[1] Conspectus Floræ Europeæ.

[2] Flora Rossica.

Mountains as along the Appalachians. This would seem to indicate very strongly a law of distribution such as noted above. It is quite probable that an exactly similar line of tabulation would be offered by the southern and northbound genera, notably those of the Compositæ, if traced up a slow-flowing river like the Mississippi on the one hand, and a more rapid river like the Rio Grande or Colorado on the other. We should expect to find at similar degrees of latitude a preponderance of southern species along the slower river. At any rate, it is comparatively clear that some sort of a proportion may be assumed between the heights of two north-and-south mountain systems, and the number of species of northern genera in the more southern extensions of each range.—CONWAY MACMILLAN.

An Important Work on the Fungi.—North American botanists already owe much to J. B. Ellis and B. M. Everhart for the excellent work they have done in the preparation of the great collection of specimens, the "North American Fungi." They are now about to deepen this obligation by the publication of a volume to be devoted to the systematic description of the North American Pyrenomycetes. The volume will be illustrated by many full-page plates, giving the external or gross anatomy, together with the internal microscopical structure. A personal inspection of many of these plates warrants us in saying that this feature of the work will prove of inestimable value to the student of the fungi. Winter's system of classification will be followed in the text. The volume will contain about five hundred pages, and may be expected some time during the year.

Ringing Trees.—Hartig gives the following account of his experiments in ringing the bark from trees. Trees from which a ring of bark has been taken are affected differently, according to the kind of tree and the thickness of the trunks. Some die rapidly, while others remain alive a long time. The author has already expressed his opinion that most likely root-structure has considerable influence on plants submitted to this operation, and any prognostications as to the probable effects must be guided by the fusions or inosculations which may have taken place between the roots of the tree under treatment and those of the untouched trees around. If the roots, after the cessation of nourishment and of growth, and the formation of new rootlets, soon lose the faculty of absorbing water and the mineral substances from the soil, the death of the plant must be the direct consequence of the operation, unless there are underground unions with the roots of neighboring trees by which life is sustained until the dead part of the trunk becomes impermeable to water. But if the roots do not entirely lose the power of absorbing water, even in their oldest parts, as in the case of maples, lime trees, etc., the trees continue to thrive without underground union, so long as the denuded trunk is in a fit state to allow of the passage of water. The following interesting example will therefore be easily understood: A spruce fir tree, a hundred years old, divided at a height of about twenty-three feet from the ground into two almost equal trunks. In 1871 a complete ring of bark was removed from one of these trunks. The tree was cut down in the winter of 1888–'89; the two crowns were quite green, that of the ringed side being rather less abundantly provided with leaves. The roots of the injured side had ceased to grow; but in spite of that the ringed branch continued to grow for seventeen years, nourished by the roots of the uninjured side.—*Gard. Chron., from Ann. Agronomiques.*

Botanical News.—The "Index to North American Mycological Literature," in the *Journal of Mycology,* will prove a most valuable aid to students of the fungi. In the last number no less than ninety-eight titles are given for the three months of May, June, and July. Although many of these papers were of slight importance, yet their number indicates a good deal of activity among the workers in this country.——Hereafter the *Journal of Mycology* will appear at least four times a year, but not at regular intervals, the intention being to issue it whenever there is sufficient material for a number.——The elevation of the section of Vegetable Pathology to the rank of a division, thereby placing it on an equal footing with the other branches of the department, is a most gratifying indication of progress in botanical science in the National Capital.——The November number of the *Torrey Bulletin* enumerates sixty-two papers in the excellent "Index to Recent American Literature." At this rate (which is not unusual) the whole number of papers on botany published in America in a year must now be somewhat more than seven hundred! Surely "of making many books (botanical ones) there is no end," and the "much study" required by them will most assuredly prove "a weariness of the flesh."——Dr. Britton's "List of State and Local Floras of the United States and British America" contains nearly eight hundred entries. Every state and territory has had one or more catalogues made of some portion of its plants. Naturally the older states have more such lists than the newer ones; but some new states have been more favored than some old ones. Thus, while Minnesota has 21, Kansas 30, and Colorado 15, Virginia, Georgia, and Alabama have but four each, and some others have still fewer.——Theodore Holm, of the United States

National Museum, publishes in the proceedings of that institution a suggestive paper on the leaves of Liriodendron, being a study of the leaf-forms observed on individual trees. Thirty-eight figures make it plain that there is very much variation in form in the leaves of this species, and suggest that many of the so-called species based upon the forms of fossil leaves may have little real foundation. Certainly there are as marked differences between some of the leaf-forms figured by Mr. Holm as there are between those often regardad as species by paleobotanists——Two "garden scholarships" will be awarded by the director of the Missouri Botanical Garden prior to the first of April next. These are open to young men not more than twenty years of age, and will entitle the recipients to instruction in practical horticulture and the allied subjects, as well as a sum of money sufficient to cover all expenses of living. The conditions under which these may be obtained may be learned by addressing the Director at St. Louis. ——The October *Botanical Gazette* contains a portrait of J. B. Ellis, the well-known mycologist.——In the October number of the *Revue Generale de Botanique*, Henri Jumelle publishes an interesting paper on the influence of anesthetics on the transpiration of plants. By an ingenious apparatus plants were subjected to the fumes of ether, when it was found that although assimilation was stopped, the transpiration of water was greatly increased.——Part V. of Macoun's Catalogue of Canadian Plants has just come to hand. It is devoted to the Acrogens, and a long list of "additions and corrections" to the preceding parts. Thirteen species of Equisetum are enumerated, sixty-four species of ferns and adder-tongues, and twenty-two Lycopods and their allies. This part completes volume II. of the catalogue. In part VI., which will begin a new volume, we are promised the Characeæ, Musci, and Hepaticæ.——In a recent number (January, 1891) of the *Pharmaceutische Rundschau* Dr. Power and Mr. Cambier give the results of their chemical examination of two "Loco-Weeds," viz.: *Astragalus mollissimus* Torrey, and *Crotalaria sagittalis* L.——A recent number of the *Gardeners' Chronicle* contains figures of the fungus *Glœosporium læticolor* which causes the "Spot" on grapes in England.